CLAIMS

What Is Claimed Is:

1. A method of modulating the differentiation or cell division of meristematic cells in a plant, the method comprising altering the level of RRB activity in said meristematic cells.

2. The method of claim 1, wherein said meristematic cell is in a shoot apical meristem.

3. The method of claim 1, wherein said meristematic cell is in an endosperm.

4. The method of claim 2 wherein formation of the leaf primordium is modulated.

5. The method of claim 2 wherein formation of the inflorescence bolt is modulated.

6. The method of claim 1, wherein said meristematic cell is in a root apical meristem.

7. The method of claim 1, wherein said meristematic cell is in a vascular meristem.

8. The method of claim 1, wherein said level of RRB activity is decreased, thereby increasing the growth of said plant.

9. The method of claim 8, the method comprising introducing an inhibitor of RRB activity into said meristematic cells.

10. The method of claim 8, the method comprising introducing an expression cassette comprising a promoter operably linked to an RRB polynucleotide.

11. The method of claim 10, wherein said RRB polynucleotide is at least about 60% identical to SEQ ID NO:1.

12. The method of claim 10, wherein said RRB polynucleotide encodes a mutant RRB polypeptide, whereby said mutant RRB polypeptide provides dominant negative RRB activity in said meristematic cells.

13. The method of claim 10, wherein said RRB polynucleotide is operably linked to said promoter in an antisense orientation.

14. The method of claim 10, wherein said promoter is a tissue-specific promoter.

15. The method of claim 10, wherein said promoter is an inducible promoter.

16. The method of claim 1, wherein said level of RRB activity is increased, thereby decreasing the growth of said plant.

17. The method of claim 16, comprising introducing an expression cassette comprising a promoter operably linked to an RRB polynucleotide.

18. The method of claim 17, wherein said polynucleotide is operably linked to an inducible promoter.

19. The method of claim 16, wherein said polynucleotide is operably linked to a tissue-specific promoter.

20. An isolated nucleic acid, comprising an RRB polynucleotide that is:
(i) at least about 60% identical over at least 500 base pairs to SEQ ID NO: 1; or
(ii) encodes the RRB polypeptide shown in SEQ ID NO: 2.

21. The isolated nucleic acid of claim 20, wherein said RRB polynucleotide comprises SEQ ID NO:1.

22. The isolated nucleic acid of claim 20, wherein said RRB polynucleotide encodes a full-length RRB polypeptide.

23. The isolated nucleic acid of claim 20, wherein said RRB polynucleotide is operably linked to a promoter.

24. The isolated nucleic acid of claim 23, wherein said promoter is an inducible promoter.

25. The isolated nucleic acid of claim 23, wherein said promoter is a tissue-specific promoter.

26. A transgenic plant, comprising an expression cassette comprising a promoter operably linked to the nucleic acid of claim 20.

27. The transgenic plant of claim 26, wherein said promoter is an inducible promoter.

28. The transgenic plant of claim 26, wherein said promoter is a tissue-specific promoter.